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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,909	08/09/2001	Takashige Ohta	70904-56377	4516

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EXAMINER

LIU, MING HUN

ART UNIT PAPER NUMBER

2697

DATE MAILED: 07/31/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

7/24/03

Office Action Summary

Application No.

09/925,909

Applicant(s)

OHTA ET AL.

Examiner

Ming-Hun Liu

Art Unit

2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2 are rejected under 35 U.S.C. 102(a) as being unpatentable over the applicant's admitted prior art.

In reference to claim 1, the applicant establishes on page 4, line 22 – page 5, line 5 that it a signal line drive circuit provided with a reference voltage chooser circuit for choosing one of incoming voltages in accordance with tones represented by an image signal to output the chosen voltage as a signal line drive signal, comprising a reference voltage line directly transmitting a first reference voltage supplied by external reference voltage supply means to the reference voltage chooser circuit, is already known in the art.

In reference to claim 2, the applicant further discloses on page 5, lines 6-18 a second reference voltage produced by voltage division from at least two of the first reference voltages is supplied to the reference voltage chooser circuit via a buffer circuit having a high input impedance and a low output impedance and the first reference voltages are directly supplied to the reference voltage chooser circuit in which a voltage is chosen from input voltages and then output as a signal line drive signal in accordance with the tones represented by the image signal.

3. Claims 7-8 are rejected under 35 U.S.C. 102(b) as being unpatentable over US Patent 5,477,234 to Suzuki et al.

In reference to claim 7, Suzuki discloses a signal line drive circuit, comprising a sampling circuit for sampling an image signal (figure 4, item 22), a reference voltage chooser circuit for choosing a reference voltage in accordance with the sampled signal to output a signal line drive signal (column 3, lines 11-14) and a decoder circuit for controlling the reference voltage chooser circuit in accordance with the sampled signal (figure 4, item 21 and column 3, lines 28-32). The decoder circuit is controlled through a third control signal to change a decoder table and the reference voltage chooser circuit changes a reference voltage choosing pattern (column 3, line 66 – column 4, line 8).

In reference to claim 8, Suzuki further explains that the decoder circuit is controlled in accordance with the number of tones represented by the image signal (column 3, lines 28-32).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the applicants admitted prior art and US Patent 6,278,426 to Akiyama.

Referring to claim 3, portions of the claim are rejected on the same grounds as the rejection outlined for claims 1 and 2. The added limitation of including a power supply voltage supplied to the buffer circuit via a first switch controlled through a first control signal is discussed by Akiyama on column 4, lines 64-67. The display could have been easily modified

according to Akiyama's suggestions by inserting a switch and control line to the buffer of the original display. It would have been obvious to one skilled in the art to incorporate Akiyama's invention to the prior art display, as it will serve as a power conservation method in periods where the buffer is inactive.

Referring to claim 4, it is obvious if not inherent to the claim that the first switch is controlled in accordance with the number of tones represented by the image signal since the control signal must decide which buffers must be activated.

6. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the applicants admitted prior art and US Patent 5,570,105 to Koyama.

Referring to claim 5, portions of the claim are rejected on the same grounds as the rejection outlined for claims 1 and 2. The added limitation of including a second switch controlled through a second control signal is interposed between the first reference voltages and the voltage divider circuit is discussed by Koyama and shown in figure 12. Koyama's modifications could have been easily added to the display by inserting a switch between the ladder resistors in the voltage divider circuit. One skilled in the art would have been motivated to incorporate these switches in order to conserve power during periods of operation where the entire grayscale capability would not be needed.

In reference to claim 6, Koyama discusses that the second switch is controlled in accordance with the number of tones represented by the image signal (column 6, lines 32-43).

7. Claims 9-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination the applicant's admitted prior art and Suzuki in view of Koyama and Akiyama.

In reference to claim 9-11, 13, 15, 18, -20, 22-23, Suzuki's invention builds on top of the foundations laid out in the admitted prior art, as it is a more detailed account of the limitations outlined in the admitted art. Incorporating Koyama's invention with Suzuki's invention would have been natural as both inventions set out to solve similar problems with slightly different methods of implementation. Akiyama's improvements could have been easily incorporated to further conserve energy by taking advantage of the inactivity of unused buffers. One skilled in the art would have recognized that these four references deal with similar power conservation issues in gray scale management and would have incorporated the different elements together accordingly in the combinations outlined by the applicant. Therefore the reminder of the claims that deal with specific combinations of the different power saving elements, namely switching power to the voltage divider and buffer, have already been established by the precedence above and are subsequently rejected with the same reasoning.

Claims 12, 14, 16, 18, 21, 24 are rejected on the grounds outlined in the rejection of claim 9. In reference to the added limitation of incorporating the device in portable apparatuses, it would have been obvious to one skilled in the art to incorporate the claimed invention in portable apparatuses because of commonness of having display elements on portable devices and also for the power saving needs often required by portability.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,225,992 to Hsu et al: Voltage divider with switches.

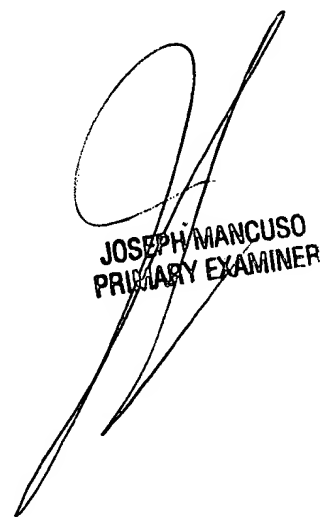
US Patent 6,580,359 to Tam: Switch on the buffer for power in matrix.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ming-Hun Liu whose telephone number is 703-305-8488. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 703-305-3885. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Ming-Hun Liu
July 28, 2003


JOSEPH MANCUSO
PRIMARY EXAMINER